

Claims

1. A drug delivery device comprising: a drug; and a vascular implant having a blood-contacting surface and a helical formation on the blood contacting surface, the helical formation being capable of inducing helical flow to blood flowing past the helical formation, and the drug being releasably associated with the helical formation of the vascular implant.
2. A drug delivery device according to claim 1 wherein the drug is mixed into the material from which the helical formation is made.
3. A drug delivery device according to claim 1 wherein the drug is coated onto the surface of the helical formation.
4. A drug delivery device according to any one of the preceding claims wherein the helical formation is made from a polymer, preferably a polymer foam, more preferably polyamide, polyester or polyurethane.
5. A drug delivery device according to claim 4 as dependent on claim 3 wherein the drug is bound onto the cellular structure of the polymer.
6. A drug delivery device according to any one of the preceding claims wherein the drug is an anticoagulant, an antiplatelet agent, an angiogenesis inhibitor; a cyclooxygenase inhibitor; a gene therapy agent or a mixture of two or more of said drugs.
7. A drug delivery device according to any one of the preceding claims wherein the vascular implant is an intravascular stent, an intravascular stent insert, a vascular graft, or a stent graft.
8. A drug delivery device according to claim 7 wherein the vascular implant is a stent and the drug delivery device further comprises a sleeve positioned surrounding and/or within the stent.

9. A drug delivery device according to claim 8 wherein the sleeve is made from expanded PTFE.
- 5 10. A drug delivery device according to any one of the preceding claims wherein the drug is also releasably associated with the blood-contacting surface of the vascular implant.
11. A drug delivery device according to any one of the preceding claims wherein one or more further drugs are provided releasably associated with the helical formation and/or the blood-contacting surface of the vascular implant.
- 10 12. A drug delivery device according to any one of the preceding claims wherein the helix angle of the helical formation is between  $8^{\circ}$  and  $20^{\circ}$ .
13. A drug delivery device according to any one of the preceding claims wherein the helical formation comprises at least one fin.
14. A drug delivery device according to claim 13 wherein the at least one fin has the shape of a right-angle triangle in cross-section.
- 15 15. A drug delivery device according to claim 13 wherein the at least one fin has the shape of an isosceles triangle in cross-section.
16. A drug delivery device according to claim 13 where the at least one fin has the shape of a bell in cross-section, preferably an asymmetric bell.
- 20 17. A drug delivery device according to any one of claims 1 to 12 wherein the helical formation comprises a groove.